

by Cuvier still remains the most perfect yet discovered there. This was the specimen said to have been given up to the French army on the capture of Maestricht, and which is now in the Paris Museum. So much was thought about it that the story goes that the French gunners had orders not to point their artillery to that portion of the town where it was known to be. In America Prof. O. C. Marsh tells us, the group attained a marvellous development, and was represented by very many genera and species belonging to even diverse families. In a paper in the current number (January) of the *American Journal of Science* he gives some new characters of the group, based on the examination of an enormous collection in the museum of Yale College, which is calculated to contain the remains of not less than 1,400 distinct individuals. In not a few of these the skeleton is nearly if not quite complete, so that every part of its structure can be determined with almost absolute certainty. Already from this immense storehouse has Prof. Marsh made out various important details of the anatomy of the group. In the present paper he communicates several others which had escaped other observers. Several specimens, one of which is figured, prove the presence of a sternum which is of the true lacertilian type. The entire pectoral arch and paddles in several genera are described; the general structure of the paddles is Cetacean in type; hyoid bones have been found. In some genera the orbit was protected by a ring of osseous plates, composed of but a single row of plates overlapping; the transverse bone of Cuvier (ectopterygoid, Owen) is present in several of the genera. The accuracy of Cuvier's determination of the pterygoid bones can no longer be called in question; Cope errs in calling them palatines. All these newly-discovered characters and facts indicate a true lacertilian alliance, and a new sub-order of lizards should be formed, to be called Mosasauria.

NEW ENGLAND ISOPODS.—In the *Proceedings* of the United States National Museum (November 5, 1879) Oscar Harger briefly describes the marine isopods collected by the United States Commission of Fish and Fisheries. Fuller descriptions with figures of most of the species are promised later. As new species are described *Janira spinosa*, from Banquereau, and *Lepidochela rapax*, from Annisquam. There are forty-three species enumerated, of which eleven are to be found on the coasts of Europe.

THE FOSSIL HORSES OF CONSTANTINE.—Veterinary Surgeon P. H. Thomas has quite recently published an interesting account of the remains of some fossil horses found in the neighbourhood of Constantine, in Algeria. It will be remembered that the environs of Constantine are traversed by large and deep valleys, on the flanks of which, as far as an elevation seldom exceeding 600 metres, the stripes of a fluvial-lacustrine pliocene formation lie stratified. These, at their base, are characterised by the presence of a chalky marl, and towards their summits by gritty conglomerates, pudding-stones, and sand; the fluvial lacustrine deposits contain a somewhat transition fauna composed of some of the larger vertebrates, amongst which two species of horse have been found, one an Hipparion and one very near to, if not identical with, the *Equus stenonis* (Gaudry), of the pliocene of Europe. In the bottom of these valleys, at the base of the steep banks of the larger rivers, turfy deposits are found, appertaining in all probability to a recent quaternary period in which a fauna appears—which, though showing some affinities to the previously-mentioned fauna, is more clearly connected with that actually existing. Here are to be found remains of a horse (*Equus caballus*) differing by only a few secondary characters from the actually living African horse; an ass of small dimensions, presenting in its dentition some characters calling to mind the genus Hipparion, which genus had, however, disappeared since the preceding geological period. In the grey marl which immediately lie over the alluvial turf, and which appear to be very recent, there will be found in the lowest strata the remains of horses, horned cattle, and molluscs, differing in no way from those of the present day. In a middle stratum remains of flint weapons have been found (at about 2.50 m. from the surface of the soil), while at about 1 metre below this surface, vestiges of the Roman occupation will be met with.

PHYSICAL NOTES

MEASUREMENTS of the movements of glaciers have hitherto been directed either to approximate determination of the yearly or daily mean velocity, or to showing that the motion of glaciers

resembles that of liquids. Some new measurements by Herr Koch and Fr. Klocke (*Wied. Ann.*, No. 12) have been limited to ascertaining the motion of a point of the surface in a vertical plane parallel to the direction of length of the glacier, with a view to finding the real nature of the glacier's progress, whether continuous and in the same direction or not. Two scales were placed, one vertical, the other horizontal, being attached to a post, fixed half a metre deep in the ice, and having a cone of ice and debris formed round it. This was on the west side of the Morteratsch glacier, about $1\frac{1}{2}$ km. from its principal extremity. The observations were made in August and September, the scales being watched by day only, through a fixed telescope with cross-wires. The number of scale parts passing the cross gave the direct and horizontal components of the motion. Another similar post with scales was set up near, and in the field of vision. The observations proved that the motion of the glacier is by no means uniform, for one and the same point may move now upwards, now downwards, towards the mountain, or towards the valley. Further, two points of the surface, about 50 to 60 metres separate from each other, may, at the same time, move in different, and even in opposite directions.

THE behaviour of membranes in sounding columns of air has been recently investigated by Herr Kohlrausch (*Wied. Ann.*, No. 12), and with the following results (which sufficiently indicate the line of research):—1. Open membranes (freely in contact with the air on both sides) vibrate in the ventral segments of stationary waves, and come to rest in the nodes; covered membranes (shut off from the external air on one side) vibrate in the nodes and come to rest in the ventral segments. 2. A fine open membrane stretched over a ring is a very sensitive means of determining the position of the nodes in stationary waves. 3. If a solid body be brought between two nodes of the stationary vibrations of a pipe, the half wave between these two nodes contracts, while the others are lengthened, and the pipe gives a tone corresponding to the longer half-waves, consequently a deeper one.

FROM a comparison of the temperature co-efficients of fluidity and galvanic conductivity for a number of substances (*Wied. Ann.*, No. 12), Herr Grottrian finds that with increasing concentration of a solution, both coefficients vary in the same sense. In solutions of NH_4Cl , KCl , KBr , and KI , the galvanic conductivity increases nearly in proportion to the percentage proportion. The fluidity, on the other hand, varies but little with the concentration.

A SLIGHT improvement has been introduced into the Bunsen grease-spot photometer by Herr Toepler (*Wied. Ann.*, No. 12), rendering the observations much less dependent on the position of the observer (the angle between his line of sight and the paper screen). The grease spot is done away with, and the thickness of paper is reduced instead, to give a spot. Between two very thin moderately transparent sheets of parchment paper, having a small circular aperture, is placed a sheet of ordinary strong paper.

DR. BAUMGARTNER has recently made, in Prof. Pfaunder's laboratory (*Wied. Ann.*, No. 12), a series of determinations of the specific heat of water by a method of mixtures, in which boiling water was poured directly into the cold water of the calorimeter. The specific heat at 100° (that at $0^\circ = 1$) was found 1.0307 (as against 1.0130 by Regnault; 1.0220 Regnault, according to Bosscha's calculations, 1.0302 v. Münchhausen and Wüllner, 1.0720 Heinrichsen, 1.1220 Jamin and Amaury, 1.1255 Marie Stamo).

THE telephone has been found by Herr Niemöller (*Wied. Ann.*) capable of determining very quickly and accurately the resistance of liquids. It is substituted for the galvanometer in a galvanic bridge, and an induction current is used, then, if the resistances compared are a large liquid resistance on the one hand, and a Siemens's resistance-box on the other so that the electro-dynamic constants of the branches are very small; if, further, a German silver or platinum wire be used as measuring wire, it is found that in the position where the galvanometer shows no deflection, the tone in the telephone has a well-marked minimum of intensity. Supposing the liquid resistance has 2,000 units, a variation of it, even four units, reveals itself in a displacement of the minimum position.

FOR study of liquid waves Signor Bazzi lately used (*N. Cim.* (3) 6, p. 98) a trough 6 m. long, 10 cm. deep, and 5 cm. wide. In one end of it dipped a wooden parallelepiped, which could